

Section 112 Rejections

The Office Action rejected claim 20 and 26-29 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. Claims 20 and 26 have been amended. Amended claim 20 and claim 26 and claims 25-29 dependent from claim 26 are now believed allowable.

Section 103 (a) Rejections

The Office Action rejected claims 1-6, 8, 9, 10-12, 18-22, and 26-29 under 35 U.S.C. § 103(a) as being unpatentable over Heberling (U.S. Patent 4,938,701) (hereinafter “Heberling”) or Amberg et al. (U.S. Patent 6,075,704) (hereinafter “Amberg”) or Leman (U.S. Patent 6,261,104) (hereinafter “Leman”) in view of Broeksteeg (U.S. Patent 5,066,236) (hereinafter “Broeksteeg”), Amberg, Lee et al. (U.S. Patent 5,454,726) (hereinafter “Lee”), Provencher et al. (U.S. Patent 5,860,816) (hereinafter “Provencher”), Fox (U.S. Patent 3,181,101) (hereinafter “Fox”), HDM (hereinafter “HDM”), Dent (U.S. Patent 5,793,617) (hereinafter “Dent”), Weber et al. (U.S. Patent 4,820,169) (hereinafter “Weber”), and Masuda et al. (U.S. Patent 5,616,034) (hereinafter “Masuda”). As set forth in more detail below, Applicants respectfully traverse the rejection as to the currently pending claims.

The Applicants respectfully submit that the Examiner has not presented a prima facie case for combining any of the cited references. As stated in the MPEP section 2143, for a prima facie case “First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.” Applicants believe that the Examiner has not even met the first prong of this test. As stated in the MPEP section

2143.01 “The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (emphasis added)”. There is no motivation to combine the elements of Heberling or Amberg or Leman with elements of Broeksteeg, Amberg, Lee, Provencher, Fox, HDM, Dent, Weber, and Masuda. Claims 3 and 9 have been cancelled. Amended claim 1 and claims 2, 4-6 and 8 dependent from claim 1 are believed allowable for at least the above stated reason.

In addition, Heberling, Amberg, Leman, Broeksteeg, Lee, Provencher, Fox, HDM, Dent, Weber, and Masuda fail to disclose or suggest all of the elements of Applicants’ amended claim 1. Amended claim 1 recites “a first set of one or more wafers with one or more electrical connectors, wherein the one or more electrical connectors are coupled to one or more first pins, wherein the one or more first pins are oriented substantially ninety degrees from the one or more electrical connectors... a second set of one or more wafers with one or more mating receptacles, wherein the one or more mating receptacles receive the one or more electrical connectors, wherein the one or more mating receptacles are coupled to one or more second pins, wherein the one or more second pins are oriented substantially ninety degrees from the one or more mating receptacles... (emphasis added)” Heberling, Amberg, Leman, Broeksteeg, Lee, Provencher, Fox, HDM, Dent, Weber, and Masuda fail to disclose or suggest “a first set of one or more wafers with one or more electrical connectors, wherein the one or more electrical connectors are coupled to ~~one or more~~ first pins, wherein the one or more first pins are oriented substantially ninety degrees from the electrical connectors... a second set of one or more wafers with one or more mating receptacles, wherein the one or more mating receptacles receive the one or more electrical connectors, wherein the one or more mating receptacles are coupled to one or more second pins, wherein the one or more second pins are oriented substantially ninety degrees from the mating receptacles... (emphasis added)” Therefore Broeksteeg, Amberg, Lee, Fox, HDM, Provencher, Dent, Weber, and Masuda do not, in combination with Heberling, Amberg, or Leman, disclose or suggest all the elements of amended claim 1.

Applicants further note that the Examiner has not stated any specific reasons for rejecting claims 10-11, 18-19, 21-22, and 26-29 as unpatentable over Heberling or Amberg or Leman in view of Broeksteeg, Amberg, Lee, Provencher, Fox, HDM, Dent, Weber, and Masuda. Applicants believe that all the elements of claims 10-11, 18-22, and 26-29 are not present in Heberling or Amberg or Leman in view of Broeksteeg, Amberg, Lee, Provencher, Fox, HDM, Dent, Weber, and Masuda. Applicants further believe that there is not motivation or teaching within Heberling or Amberg or Leman in view of Broeksteeg, Amberg, Lee, Provencher, Fox, HDM, Dent, Weber, and Masuda to combine any or all of these references. 37 C.F.R. § 1.113 states “In making such final rejection, the examiner shall repeat or state all grounds of rejection then considered applicable to the claims in the application, clearly stating the reasons in support thereof. (emphasis added)” Applicants request that the Examiner withdraw the rejection of claims 10-11, 18-19, 21-22 and 26-29 or Applicants request the Examiner specify the Examiner’s reasons for rejecting claims 10-11, 18-19, 21-22, and 26-29 as unpatentable over Heberling or Amberg or Leman in view of Broeksteeg, Amberg, Lee, Provencher, Fox, HDM, Dent, Weber, and Masuda.

Inter alia, Heberling, Amberg, Leman, Broeksteeg, Amberg, Lee, Provencher, Fox, HDM, Dent, Weber, and Masuda do not present, either separately or in combination “a first board; an expander board; a first connector having a first end adapted to be coupled to the first board and a second end adapted to be coupled to a second connector coupled to the expander board, wherein the first board and the expander board are coupled substantially in parallel when the first connector is coupled to the second connector, the first connector comprising: one or more wafers, wherein the one or more wafers comprises: a first set of electrical connectors to couple to one or more mating receptacles on the second connector, wherein the first set of electrical connectors is coupled to a set of corresponding pins, wherein the set of corresponding pins are oriented substantially ninety degrees to the first set of electrical connectors; a conductive layer coupled to one or more compliant pins; a power module; and a first guide module for aligning the first connector with the second connector coupled to the expander board comprising a guide pin, wherein the first guide module aligns the first connector with a second guide module on the second connector coupled to the expander board, wherein the

second guide module comprises a corresponding opening for the guide pin to align the first connector and the second connector by slidably engaging the guide pin” as recited by amended claim 10. Applicants believe amended claim 10 and claim 11 dependent from amended claim 10 are allowable for at least the above stated reason.

Inter alia, Heberling, Amberg, Leman, Broeksteeg, Amberg, Lee, Provencher, Fox, HDM, Dent, Weber, and Masuda do not present, either separately or in combination “coupling a first connector to a first printed circuit board, wherein the first connector receives and delivers at least one first voltage; aligning the first connector with a second connector coupled to a second printed circuit board using a first guide module comprising a guide pin, wherein the first guide module aligns the first guide module on the first connector with a second guide module on the second connector, wherein the second guide module comprises a corresponding opening for the guide pin to slidably engage the guide pin, wherein aligning the first connector with the second connector aligns the first printed circuit board and the second printed circuit board substantially parallel; coupling the second printed circuit board to the first printed circuit board using the first connector and the second connector, wherein the coupled first and second printed circuit boards are substantially parallel to each other; and providing power at a second voltage from the first printed circuit board to the second printed circuit board using a power module in the first connector, wherein the second voltage is larger than the first voltage” as recited by amended claim 18. Applicants believe amended claim 18 and claims 19-22 dependent from amended claim 18 are allowable for at least the above stated reason.

Inter alia, Heberling, Amberg, Leman, Broeksteeg, Amberg, Lee, Provencher, Fox, HDM, Dent, Weber, and Masuda do not present, either separately or in combination “a top supporting member; a bottom supporting member; one or more wafers coupled to the top and bottom supporting members; a power module; and a guide module for aligning the connector with an expander board” as recited by amended claim 26. Applicants believe amended claim 26 and claims 27-29 dependent from amended claim 26 are allowable for at least the above stated reason.

XV
HDM
The Office Action rejected claim 18-22 as unpatentable over Amberg in view of Fox, Broeksteeg, HDL, Weber, Dent and Masuda. The Examiner has not given any

identifying information to a prior art reference entitled “HDL”. Applicants respectfully request the identity of prior art reference “HDL”. For the current office action, the Applicants will assume the Examiner meant “HDM”.

Amended claim 18 recites “aligning the first connector with a second connector coupled to a second printed circuit board using a first guide module comprising a guide pin, wherein the first guide module aligns the first guide module on the first connector with a second guide module on the second connector, wherein the second guide module comprises a corresponding opening for the guide pin to slidingly engage the guide pin, wherein aligning the first connector with the second connector aligns the first printed circuit board and the second printed circuit board substantially parallel (emphasis added)”. Neither Amberg, Fox, Broeksteeg, HDM, Weber, Dent, or Masuda disclose or suggest, either separately or in combination, all the elements of amended claim 18. For example, inter alia, neither Amberg, Fox, Broeksteeg, Weber, Dent, or Masuda disclose or suggest “aligning the first connector with a second connector coupled to a second printed circuit board using a first guide module comprising a guide pin, wherein the first guide module aligns the first guide module on the first connector with a second guide module on the second connector, wherein the second guide module comprises a corresponding opening for the guide pin to slidingly engage the guide pin, wherein aligning the first connector with the second connector aligns the first printed circuit board and the second printed circuit board substantially parallel (emphasis added)” as recited by amended claim 18.

The Applicants also believe that there is no teaching or motivation to combine elements of Fox, Broeksteeg, HDM, Weber, Dent, and Masuda with Amberg. As stated above, the MPEP § 2143.01 states “The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (emphasis added)”. Applicants believe that amended claim 18 is allowable for at least the above stated reasons.

The Examiner has not stated any reasons behind the Examiner's rejection of the dependent claims 19-22 with respect to the rejection as to Amberg in view of Fox, Broeksteeg, HDL, Weber, Dent, and Masuda. Applicants believe that the elements of dependent claims 19-22 are not found either separately or in combination in the Amberg, Fox, Broeksteeg, HDM, Weber, Dent, and Masuda references. The Applicants also believe that there is no teaching or motivation to combine Amberg, Fox, Broeksteeg, Weber, Dent, Masuda, and/or HDM to teach the elements of claims 18-22. The Applicants believe that claims 19-22 are at least allowable as being dependent from claim 18 believed allowable for at least the reasons stated above.

Examiner's Questions

In response to the Examiner's questions, the Applicants do not believe that use of both 48 Volt power and 2-4 Volt signal levels was standard in typical systems at the time the invention was made. With respect to the Examiner's second question, Applicants are aware of prior art systems using high voltage power levels and relatively lower voltage signal levels.

New Claims

The Applicants believe that claims 30-35 contain no new matter and are allowable as patentably distinct claims.

CONCLUSION

In light of the foregoing remarks, Applicant submits the application is now in condition for allowance, and an early notice to that effect is requested. Applicants also Request Continued Examination.

The Commissioner is authorized to charge any fees which may be required, or credit any overpayment, to Meyertons, Hood, Kivlin, Kowert & Goetzel, P.C. Deposit Account No. 50-1505\5681-49300\BNK.

Respectfully submitted,



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MARKED-UP VERSION OF THE AMENDED CLAIM

1. (Twice amended) A processor-based system, comprising:

a first board;

a second board; and

a first connector coupled to the first board [and adapted to parallelly couple the first board to the second board], comprising:

a first set of one or more wafers with one or more electrical connectors, wherein the one or more electrical connectors are coupled to one or more first pins, wherein the one or more first pins are oriented substantially ninety degrees from the one or more electrical connectors and coupled to the first board [capable of receiving and delivering at least one first voltage];

a first power module [capable of receiving and delivering a second voltage to the second board, wherein the second voltage is larger than the first voltage]; [and]

a first guide module for aligning the first connector with a second connector coupled to the second board, wherein the second connector comprises:

a second set of one or more wafers with one or more mating receptacles, wherein the one or more mating receptacles receive the one or more electrical connectors, wherein the one or more mating receptacles are coupled to one or more second pins, wherein the one or more second pins are oriented substantially ninety degrees from the one or more mating receptacles and coupled to the second board;

a second power module to couple to the first power module to electrically couple the first connector to the second connector; and

a second guide module for aligning the second connector with the first connector to parallelly couple the first board to the second board.

2. (Amended) The processor-based system of claim 1, wherein the first connector is a male connector.

4. (Twice Amended) The processor-based system of claim 1, wherein the first guide module and the second guide module [one or more guide modules] comprise one or more guide pins for aligning the first connector with the second connector [board].

5. (Twice Amended) The processor-based system of claim 1, wherein the first connector further comprises a first support member and a second support member with one or more contact modules disposed therein.

8. (Twice Amended) The processor-based system of claim 1, wherein the first connector and the second [said] connector are [is] adapted to planarly couple the first board to the second board.

10. (Twice amended) An apparatus, comprising:

a first board;

an expander board; [and]

a first connector having a first end adapted to be coupled to the first board and a second end adapted to be coupled to a second connector coupled to the expander board, wherein the first board and the expander board are coupled substantially in parallel when the first connector is coupled to the second connector, the first connector comprising:

one or more wafers, wherein the one or more wafers comprises: [capable of receiving and delivering at least one first voltage;]

a first set of electrical connectors to couple to one or more mating receptacles on the second connector, wherein the first set of electrical connectors is coupled to a set of corresponding pins, wherein the set of corresponding pins are oriented substantially ninety degrees to the first set of electrical connectors;

a conductive layer coupled to one or more compliant pins;

a power module [capable of receiving and delivering a second voltage that is larger than the first voltage]; and

a first guide module for aligning the first connector with the second connector coupled to the expander board comprising a guide pin, wherein the first guide module aligns the first connector with a second guide module on the second connector coupled to the expander board, wherein the second guide module comprises a corresponding opening for the guide pin to align the first connector and the second connector by slidingly engaging the guide pin.

18. (Twice Amended) A method, comprising:

coupling a first connector to a first printed circuit board, wherein the first connector receives and delivers [is capable of receiving and delivering] at least one first voltage;

aligning the first connector with a second connector coupled to a second printed circuit board using a first guide module comprising a guide pin, wherein the first guide module aligns the first guide module on the first connector with a second guide module on the second connector, wherein the second guide module comprises a corresponding opening for the guide pin to slidingly engage the guide pin, wherein aligning the first connector with the second connector aligns the first printed circuit board and the second printed circuit board substantially parallel;

coupling the second printed circuit board to the first printed circuit board using the first connector and the second connector, wherein the coupled first and second printed circuit boards are substantially parallel to each other; and

providing power at a second voltage from the first printed circuit board to the second printed circuit board using a power module in the first connector, wherein the second voltage is larger than the first voltage.

19. (Amended) The method of claim 18, wherein the first connector includes [including] a first set of electrical connectors and a second set of electrical connectors positioned substantially perpendicular to each other, wherein coupling the first connector to the first printed circuit board comprises coupling the first set of electrical connectors to the first printed circuit board.

20. (Amended) The method of claim 19, wherein coupling the first set of electrical connectors to the first printed circuit board comprises inserting the first set of electrical connectors through one or more openings in the first printed circuit board, wherein the electrical connectors contract into and hold in the openings [and expanding the first set of electrical connectors in the openings].

22. (Twice Amended) The method of claim 19, wherein the [second printed circuit board includes a] second connector has [having] one or more receptacles, wherein coupling the second set of electrical connectors to the second printed circuit board comprises inserting the second set of electrical connectors in the one or more receptacles of the second connector.

26. (Amended) A connector, comprising:

a top supporting member;

a bottom supporting member;

one or more wafers coupled to the top supporting member and bottom supporting member [members and capable of receiving and delivering at least one first voltage];

a power module [capable of receiving and delivering a second voltage that is larger than the first voltage]; and

a guide module for aligning the connector with an [the] expander board.

30. (New) The method of claim 18, wherein the first voltage is about 2-4 volts and the second voltage is about 48 volts.

31. (New) A connector, comprising:

one or more wafers comprised between a top supporting member and a bottom supporting member, wherein the one or more wafers includes a conductive layer to shield the one or more wafers from interference;

a power module; and

a guide module to align the one or more wafers with a second connector, wherein the one or more wafers and the second connector couple an expander board and a circuit board substantially in parallel.

32. (New) The connector of claim 31, wherein the circuit board is a system board or an input/output board.

33. (New) The connector of claim 31, further comprising:

a joinder module for connecting the connector with the second connector.

34. (New) The connector of claim 33, wherein the joinder module further couples the connector to the expander board.

35. (New) The connector of claim 31, wherein the one or more wafers comprise a male connector and the second connector comprises a female connector.